Compliance Assurance Monitoring (CAM) Plan Evaluation
(40 CFR Part 64)

APPLICANT'S NAME: SUNSHINE GAS PRODUCERS, L.L.C. (SGP)

MAILING ADDRESS: 425 SOUTH MAIN STREET
ANN ARBOR, MICHIGAN 48104
ATTN.: MICHAEL MANN, SR. PROJECT MANAGER

EQUIPMENT ADDRESS: 14747 SAN FERNANDO ROAD
(SUNSHINE CANYON LANDFILL)
SYLMAR, CA 91342

FACILITY ID: **139938**

CONTACT PERSON: Michael Mann, Senior Project Manager
(734) 319 -2977, E-mail: mannm@dteenergy.com

APPLICATION NO.: **518031**

INTRODUCTION:

This application was submitted by Sunshine Gas Producers, LLC (SGP), on January 12, 2011 for Compliance Assurance Monitoring (CAM) Plan under 40 CFR Part 64 for the proposed landfill gas to energy (LFGTE) facility to be located on the existing Sunshine Canyon Landfill. The emissions from this proposed facility will exceed the Title V emission threshold and an initial Title V draft permit is being finalized prior to public notice and EPA review. This application will demonstrate compliance with CAM requirements for control of Total Non-Methane Organic Compounds (TNMOC) emissions from LFG combustion in proposed gas turbines and an enclosed flare.

.

The CAM rule became effective November 21, 1997, however requirements of the plan were delayed while Title V program being implemented. As SGP is a new facility, it is subject to CAM plan requirement at the time of the initial Title V permit application (see E-mail correspondences in folder).

APPLICABILITY & REQUIREMENTS:

CAM rule (40 CFR Part 64) covers emission units that are evaluated on a pollutant by pollutant basis for equipment that meet the definition of pollutant specific emission units (PSUEs). The rule applies to each PSUE if the unit is located at a major source that is required to obtain a Part 70 or 71 (Title V) permit. The CAM plan requirements are;

- Describe the indicators to be monitored
- Describe ranges or the process to set indicator ranges
- Describe the performance criteria for the monitoring, including specifications for obtaining representative data, verification procedures to confirm monitoring operational status, QA/QC procedures and monitoring frequency.
- Provide a justification for the use of parameters, ranges, and monitoring approach.
- Provide emissions test data, if necessary

- Provide an implementation plan for installing, testing, and operating the monitoring.

EVALUATION:

LFG Flare:

Applicant has proposed to use an enclosed ultra low emissions flare for control of exhaust gas generated during media regeneration process gas as part of the gas treatment system. The gas treatment and compression system is used to remove Siloxane(s) using proprietary media. During media regeneration process exhaust gas (mainly heated air with Siloxane) is destroyed using the proposed flare. Estimated uncontrolled TNMOC with the LFG fuel is 17 TPY (275 scfm LFG with 356 lb NMOC/MMcf). Flare is expected to have 98% TNMOC DRE at 1400 deg. F.

Flare Specifications:

John-Zinc, Ultra low emission, 6.4 MMBTU/Hr rating
2200 scfm regeneration gas (mainly heated air with Siloxane impurities) & 275 scfm LFG
Temperature to be measured at least 0.6 seconds downstream of the flare burner
Minimum operating temperature = 1400 deg. F
NMOC destruction efficiency = 98% @ 1400 deg F.
NMOC emission limit = 1.8 lbs/day as Methane.

MONITORING & PERFORMANCE:

Indicator: When the flare is in operation continuous temperature monitoring in the exhaust stack and temperature recorder must be in operation.
Temperature shall be measured at a location above the flame zone, at least 0.6 second downstream of the burner and not less than 5 feet from the top of the stack.
Temperature monitor shall have an accuracy of +/- 1% of the temperature being measured.
Installation, replacement and preventative maintenance for the temperature monitors shall be in accordance with manufacturer's specifications.
There shall be multiple monitors installed on each flare. When a thermocouple malfunctions or is non-functional, it shall be replaced.

Range: Minimum temperature of 1400 deg F is required. Temperature shall be recorded in degrees Fahrenheit.
The data collected by an electronic data recorder shall record at least every 15 minutes.
Excursion can be defined as any three-hour period of operation during which avg. combustion temperature is greater than 28 deg C (50 deg. F) below the minimum combustion temperature specified for the flare.
Upon detecting any excursion from the acceptable range of readings, the permittee shall investigate the excursion and take corrective action to minimize excessive emissions and prevent recurrence of the excursion as expeditiously as practicable.

Frequency: Continuous temperature monitoring and recording. Valid hour of data must have measured values for at least three 15-minute monitoring periods within the hour.
[Minimum 4 times per hr if post-control emissions are ≥ MST; or
Minimum 1 time per day if post-control emissions are < MST].

All exceedances shall be reported semi-annually that includes summary of information, at a minimum – number, duration and cause, and corrective actions taken.
Same requirements apply for the monitor downtime incidences.

Monitoring Operation & Maintenance:

The permittee shall comply with the compliance assurance monitoring operation and maintenance requirements of 40 CFR Part 64.7

Recordkeeping & Reporting:

The permittee shall comply with the recordkeeping and reporting requirements of 40 CFR Part 64.9

Performance Test:

Flare shall be tested annually to show compliance with the NMOC daily emission rate (offset limit), flare operating temperature, deg. F, TNMOC concentration (exhaust) in ppmv at 3% O2, as hexane or demonstrate 98wt% DRE.

Quality Improvement Plan:

If the District or EPA determine that a Quality Improvement Plan (QIP) is required under 40 CFR Part 64.7 (d)(2), the permittee shall develop and implement the QIP in accordance with 40 CFR Part 64.8.

LFG flow rate Monitoring:

The flare LFG flow rate shall be measured using a velocity averaging flow meter (annubar- type, Verabar) installed in the LFG fuel supply line.
LFG flow rate shall be continuously monitored and flow rate data shall be stored electronically in a Data Acquisition system (DAS) and data used to calculate total LFG use for the day.
On an annual basis a five-point calibration shall be performed on the differential pressure transmitter. Annubar shall be physically inspected for wear, corrosion and plugging.
The flow meter shall have an accuracy of +/- 1%.
LFG flow rate data to be used to determine daily fuel use and ROG (NMOC) emission to be calculated using LFG TNMOC concentration (analyzed monthly) and annually verified NMOC destruction efficiency (source tests).

Permit condition for the LFG flare, A/N 480572, is amended with the following;

15. THE OPERATOR SHALL OPERATE AND MAINTAIN THIS EQUIPMENT ACCORDING TO THE FOLLOWING REQUIREMENTS:

THE EXHAUST TEMPERATURE SHALL BE MAINTAINED AT A MINIMUM OF 1,400 DEGREES FAHRENHEIT WHENEVER THE EQUIPMENT IT SERVES IS IN OPERATION.

CONTINUOUS EXHAUST TEMPERATURE MONITORING AND RECORDING SYSTEM SHALL BE PURSUANT TO THE OPERATION AND MAINTENANCE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.7. SUCH A SYSTEM SHALL HAVE AN ACCURACY OF WITHIN ± 1% OF THE TEMPERATURE BEING MONITORED AND SHALL BE INSPECTED, MAINTAINED, AND CALIBRATED ON AN ANNUAL BASIS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS USING AN APPLICABLE AQMD OR EPA APPROVED METHOD.

FOR THE PURPOSE OF THIS CONDITION, A DEVIATION SHALL BE DEFINED AS WHEN A TEMPERATURE OF LESS THAN 1,400 DEGREES FAHRENHEIT OCCURS DURING NORMAL OPERATION. THE OPERATOR SHALL REVIEW THE RECORDS OF TEMPERATURE ON A DAILY BASIS TO DETERMINE IF A DEVIATION OCCURS OR SHALL INSTALL AN ALARM SYSTEM TO ALERT THE OPERATOR WHEN A DEVIATION OCCURS.

FOR EACH SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K, WHENEVER A DEVIATION OCCURS AT OR ABOVE 1,400 DEGREES FAHRENHEIT, THE OPERATOR SHALL TAKE IMMEDIATE CORRECTIVE ACTION, AND KEEP RECORDS OF THE DURATION AND CAUSE (INCLUDING UNKNOWN CAUSE, IF APPLICABLE) OF THE DEVIATION AND THE CORRECTIVE ACTION TAKEN.

ALL DEVIATIONS SHALL BE REPORTED TO THE AQMD ON A SEMI-ANNUAL BASIS PURSUANT TO THE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.9 AND CONDITION NOS. 22 AND 23 IN SECTION K OF THIS PERMIT.

THE OPERATOR SHALL SUBMIT AN APPLICATION WITH A QUALITY IMPROVEMENT PLAN (QIP) IN ACCORDANCE WITH 40 CFR PART 64.8 TO THE AQMD IF AN ACCUMULATION OF DEVIATIONS EXCEEDS 5 PERCENT DURATION OF THIS EQUIPMENT'S TOTAL OPERATING TIME FOR ANY SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K OF THIS PERMIT. THE REQUIRED QIP SHALL BE SUBMITTED TO THE AQMD WITHIN 90 CALENDAR DAYS AFTER THE DUE DATE FOR THE SEMI-ANNUAL MONITORING REPORT.

THE OPERATOR SHALL INSPECT AND MAINTAIN ALL COMPONENTS OF THIS EQUIPMENT ON AN ANNUAL BASIS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE OPERATOR SHALL KEEP ADEQUATE RECORDS IN A FORMAT THAT IS ACCEPTABLE TO THE AQMD TO DEMONSTRATE COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS SPECIFIED IN THIS CONDITION AND 40 CFR PART 64.9 FOR A MINIMUM OF FIVE YEARS. [RULE 3004(A) (4)-PERIODIC MONITORING, 40CFR PART 64]

Gas Turbines:

Applicant is proposing to use five (5) LFG fueled gas turbines to generate electricity at this site. Each gas turbine is rated at 48.1 MMBtu/hr based on HHV and will drive a 4.9 megawatt electric generator.

Gas Turbines Specifications:

Manufacturer	Solar
Model	Mercury 50
Exhaust Stack	4'- 7" DIA. X 26' - 6" HIGH (Revised)
Heat Input Capacity	48.1 MMBtu/hr (HHV).
Heat Rate	8833 Btu/KW.hr
Thermal Efficiency	38.2%
Power Output	4.9 MW

Inlet flow, Max. 2060 scfm LFG [@ 350 BTU/SCF LHV]
Exhaust flow rate 29,722 dscfm @ 15% O2 (67,560 acfm, calc.)
Exhaust Temperature 722 Deg. F

Monitoring Approach for the CAM Plan for Gas Turbines

		Turbines under A/Ns 480567 through 480571
I	Indicator	Combustion Chamber Temperature
II	Measurement Approach	Continuous Temperature Indicator and Recorder
III	Indicator Range and Corresponding Permit Condition (underlined)	Exhaust temperature 1100≤° F , ≥ 1300° F, or as otherwise approved by SCAQMD. This indicator range was used for CAM for an identical lfg gas turbine operating at another facility. Since this equipment has yet to be constructed, additional language was inserted to allow for flexibility.
IV	Performance Criteria	
	A. Specifications/ Data Representativeness	Temperatures measured with thermocouples installed in the combustion chamber with minimum accuracy of +/- 1% and recorded with a temperature monitor.
	B. Verification of Operational Status	The temperature data will be reviewed daily by facility personnel.
	C. QA/QC Practices and Criteria	The temperature monitor will be calibrated and maintained per manufacturer specifications.
	D. Monitoring Frequency	Continuous.
	E. Data Collection Procedures	Temperature data will be calculated and stored electronically.
	F. Averaging Period	1 hour

The following conditions are added to the gas turbine permits for CAM compliance.

- A CONTINUOUS COMBUSTION CHAMBER TEMPERATURE MONITORING AND RECORDING SYSTEM SHALL BE MAINTAINED PURSUANT TO THE OPERATION AND MAINTENANCE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.7. SUCH A SYSTEM SHALL HAVE AN ACCURACY OF WITHIN ± 1% OF THE TEMPERATURE BEING MONITORED AND SHALL BE INSPECTED, MAINTAINED, AND CALIBRATED ON AN ANNUAL BASIS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS USING AN APPLICABLE SCAQMD OR EPA APPROVED METHOD.
  [40 CFR 64]

- THE COMBUSTION CHAMBER TEMPERATURE SHALL BE RECORDED AT LEAST EVERY 15 MINUTES, AND THE HOURLY AVERAGE SHALL BE COMPUTED FROM SUCH DATA POINTS. THE OPERATOR SHALL REVIEW THE RECORDS OF TEMPERATURE ON A DAILY BASIS TO

DETERMINE IF A DEVIATION OCCURRED OR SHALL INSTALL AN ALARM SYSTEM TO ALERT THE OPERATOR WHEN A DEVIATION OCCURS.
[40 CFR 64]

- ALL DEVIATIONS SHALL BE REPORTED TO THE SCAQMD ON A SEMI-ANNUAL BASIS PURSUANT TO THE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.9 AND CONDITION NOS. 22 AND 23 IN SECTION K OF THIS PERMIT. FOR THE PURPOSE OF THIS CONDITION, A DEVIATION SHALL BE DEFINED AS WHEN THE COMBUSTION CHAMBER TEMPERATURE LESS THAN 1100 DEGREES FAHRENHEIT OR GREATER 1300 DEGREES FAHRENHEIT, OR AS OTHERWISE APPROVED BY SCAQMD, OCCURS, AVERAGED OVER ONE HOUR DURING OPERATION EXCEPT DURING START UP AND SHUTDOWN EVENTS LASTING FOR A MAXIMUM OF ONE HOUR. MULTIPLE START UP AND SHUTDOWN EVENTS CAN OCCUR CONSECUTIVELY.
  [40 CFR 64]

- FOR EACH SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K, WHENEVER A DEVIATION OCCURS FROM THE TEMPERATURE, THE OPERATOR SHALL TAKE IMMEDIATE CORRECTIVE ACTION, AND KEEP RECORDS OF THE DURATION AND CAUSE (INCLUDING UNKNOWN CAUSE, IF APPLICABLE) OF THE DEVIATION AND THE CORRECTIVE ACTION TAKEN.
  [40 CFR 64]

- A SEMI-ANNUAL MONITORING REPORT SHALL BE SUBMITTED TO SCAQMD, WHICH SHALL INCLUDE BUT MAY NOT BE LIMITED TO THE TOTAL OPERATING TIME OF THIS EQUIPMENT AND THE TOTAL ACCUMULATED DURATION OF ALL DEVIATIONS FOR EACH SEMI-ANNUAL REPORTING PERIOD.
  [40 CFR 64]

- THE OWNER OR OPERATOR SHALL SUBMIT AN APPLICATION WITH A QUALITY IMPROVEMENT PLAN (QIP) IN ACCORDANCE WITH 40 CFR PART 64.8 TO THE SCAQMD IF AN ACCUMULATION OF DEVIATIONS EXCEEDS 5% DURATION OF THIS EQUIPMENT'S TOTAL OPERATING TIME FOR ANY SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K OF THIS PERMIT. THE REQUIRED QIP SHALL BE SUBMITTED TO THE SCAQMD WITHIN 90 CALENDAR DAYS AFTER THE DUE DATE OF THE SEMI-ANNUAL MONITORING REPORT.
  [40 CFR 64]

- THE OPERATOR SHALL KEEP ALL RECORDS FOR A PERIOD OF AT LEAST FIVE (5) YEARS IN A FORMAT ACCEPTABLE TO THE SCAQMD AND IN COMPLIANCE WITH 40 CFR PART 64.9 AND SHALL BE MADE AVAILABLE TO SCAQMD PERSONNEL UPON REQUEST.
  [RULE 1150.1, 40CFR PART 64]

Rules:

Proposed CAM plan for TNMOC control devices (proposed enclosed LFG flare and gas turbines) is expected to comply with the applicable requirements of the:
40CFR Part 64
40 CFR Part 60, subpart WWW
40 CFR Part 63, subpart AAAA
Rule 1150.1 and,
Rule 1303 (b) (2)-Emission offsets.

RECOMMENDATION:

It is recommended that a CAM plan be issued for TNMOC proposed control equipment (LFG flare and gas turbines), with the proposed conditions for 40 CFR 64 compliance.